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Title: TUM DU Foil Characterization and Inspection Update

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TUM DU Foil Characterization and Inspection Update

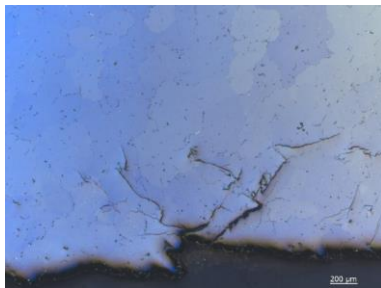
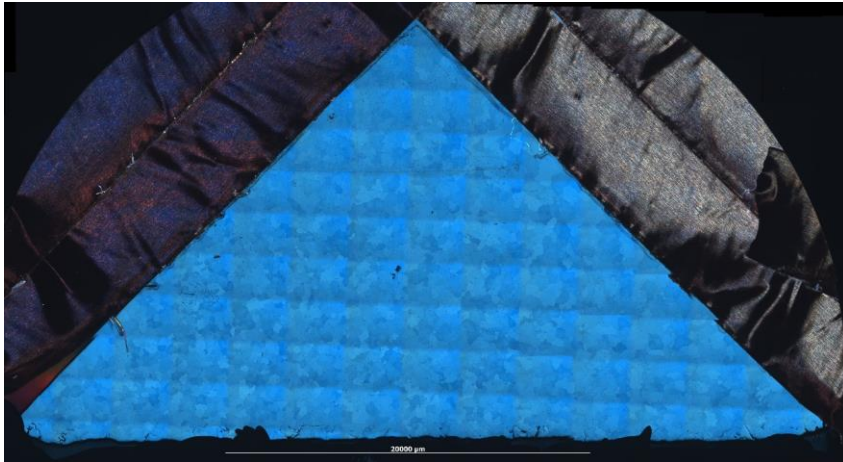
Eric Tegtmeier
Kevin Bohn

Sigma-2
Sigma-2

7/30/21

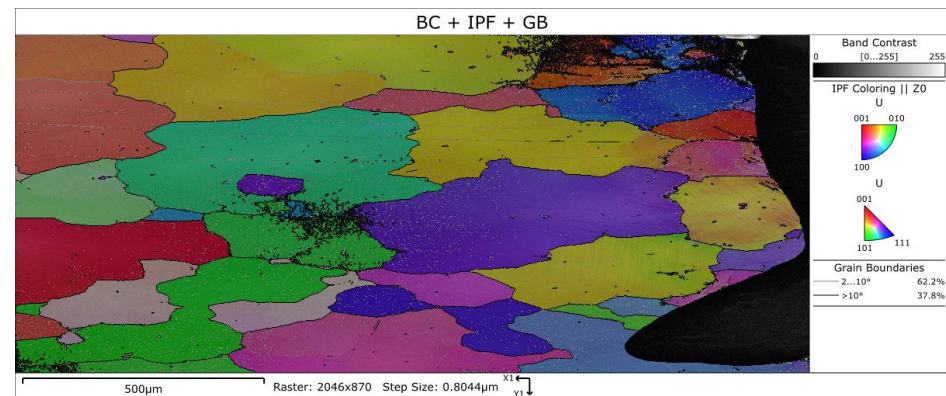
Casting Characterization: 3K32-N8-XL8V

Polarized Light



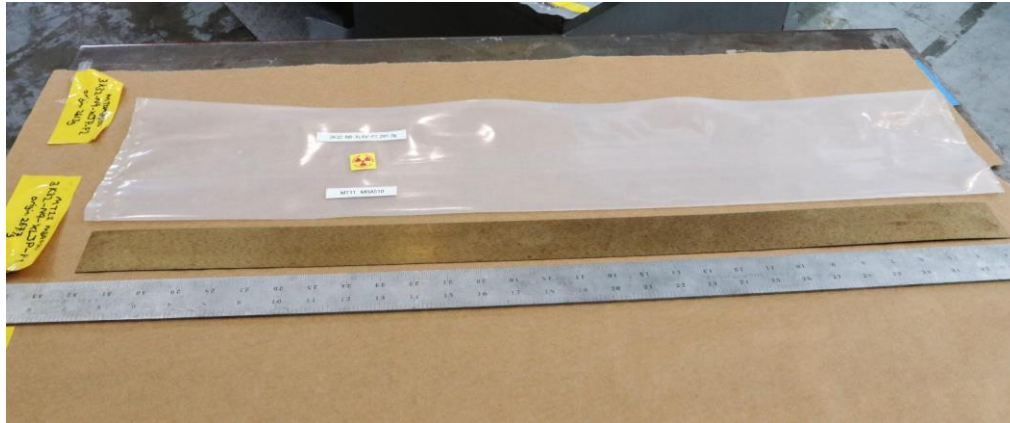
Fracturing near sheared edge

EBSD near edge



3K32-N8-XL8V Foils

F1 (HRC)



F2 (HRAC)



Inspection table



3K32-N8-XL8V F1 (no annealing step)

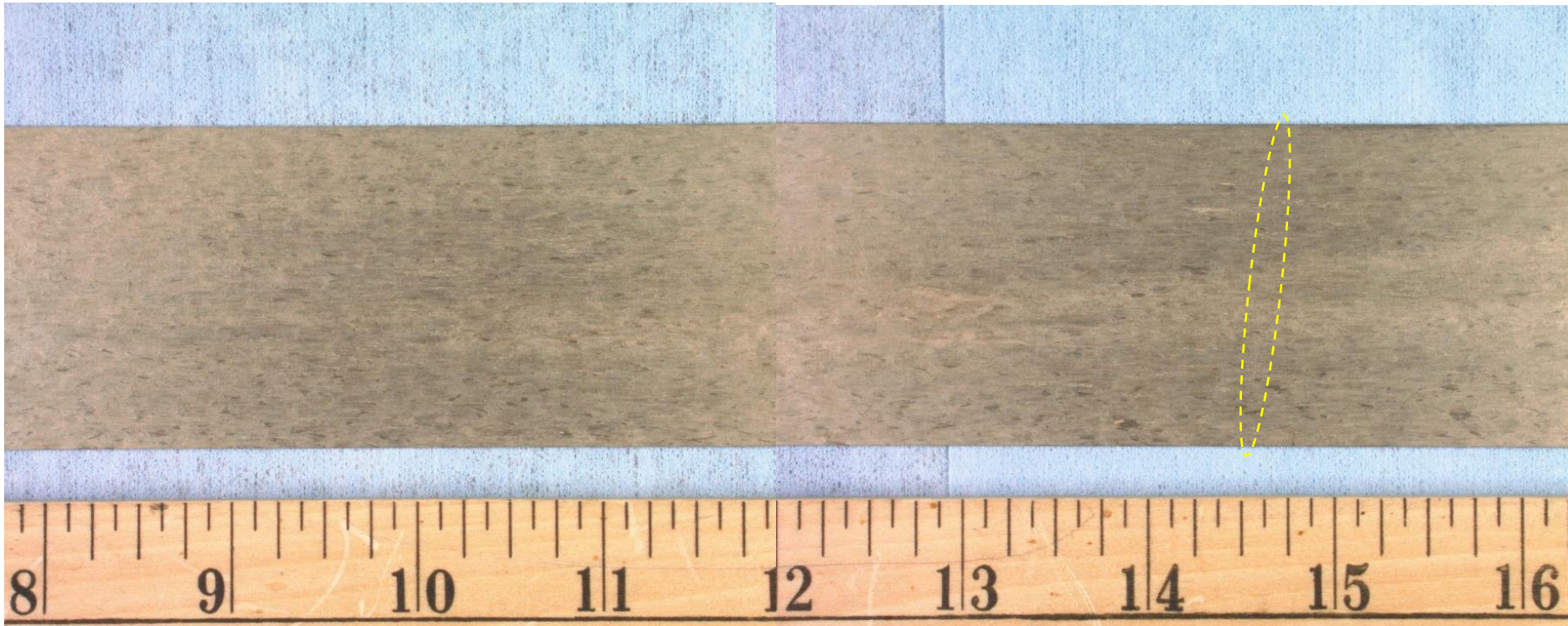
FOIL ID: 3K32-N8-XL8V-F1

	Meas	Spec														
Length (inch)	30.02"	30.000 +/- 0.062														
Width (left)	1.771"	1.772 +/- 0.010														
Width (middle)	1.753"	1.772 +/- 0.010														
Width (right)	1.751"	1.772 +/- 0.010														
burs (right)	none															
burs (left)	none															

Thickness measurements (thousandths of inch) Spec = 0.0170 +/- 0.0025

Distance from corner	0"	2"	4"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"
0	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
0.85	20.5	20	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
1.7	19.5	19.5	20	20	20	19.5	19.5	20	20	20	20	20	20	20	20	20

3K32-N8-XL8V F1 (no annealing step)



3K32-N8-XL8V F2 (annealed)

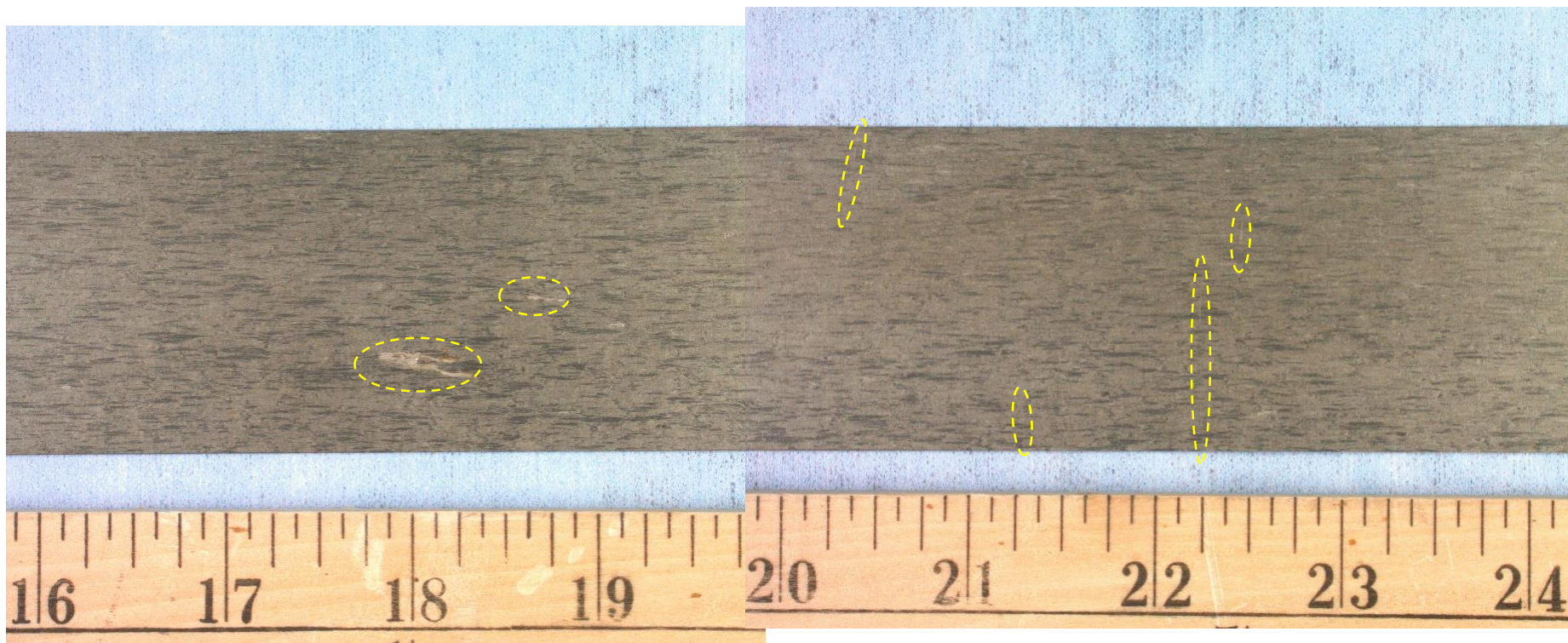
FOIL ID: 3K32-N8-XL8V-F2

	Meas	Spec														
Length (inch)	30.048	30.000 +/- 0.062														
Width (left)	1.775"	1.772 +/- 0.010														
Width (middle)	1.754"	1.772 +/- 0.010														
Width (right)	1.758"	1.772 +/- 0.010														
burs (right)	none															
burs (left)	none															

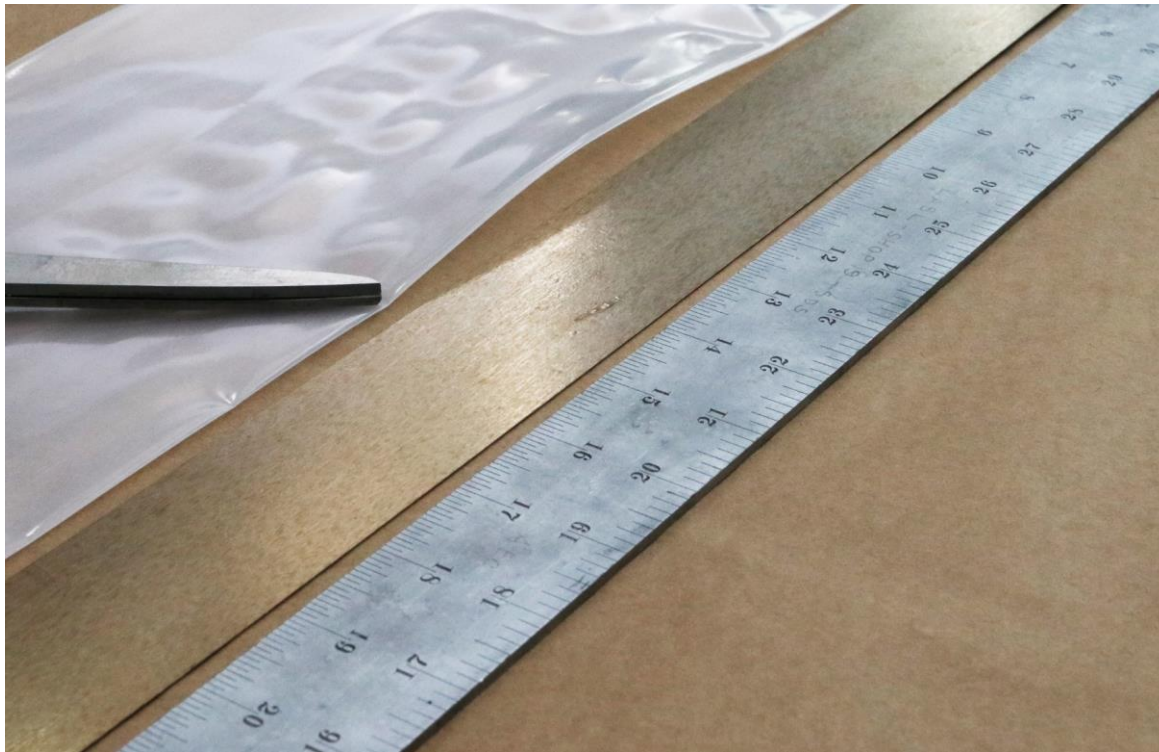
Thickness measurements (thousandths of inch). Spec = 0.0170 +/- 0.0025

Distance from corner	0"	2"	4"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"
0	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
0.85	20.5	20.5	20.5	20.5	20.5	21	20.5	20.5	20.5	21	21	21	21	21	21	20.5
1.7	20.5	20.5	21	21	21	21	20.5	21	21	21	21	20.5	20.5	20.5	21	21

3K32-N8-XL8V F2 (annealed)



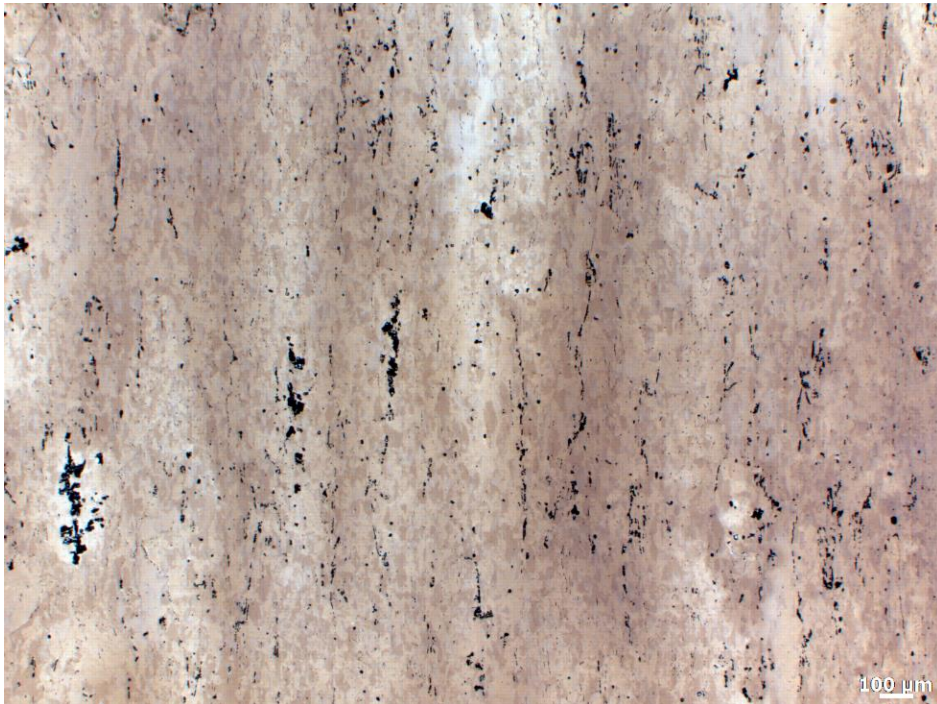
3K32-N8-XL8V F2 (annealed)



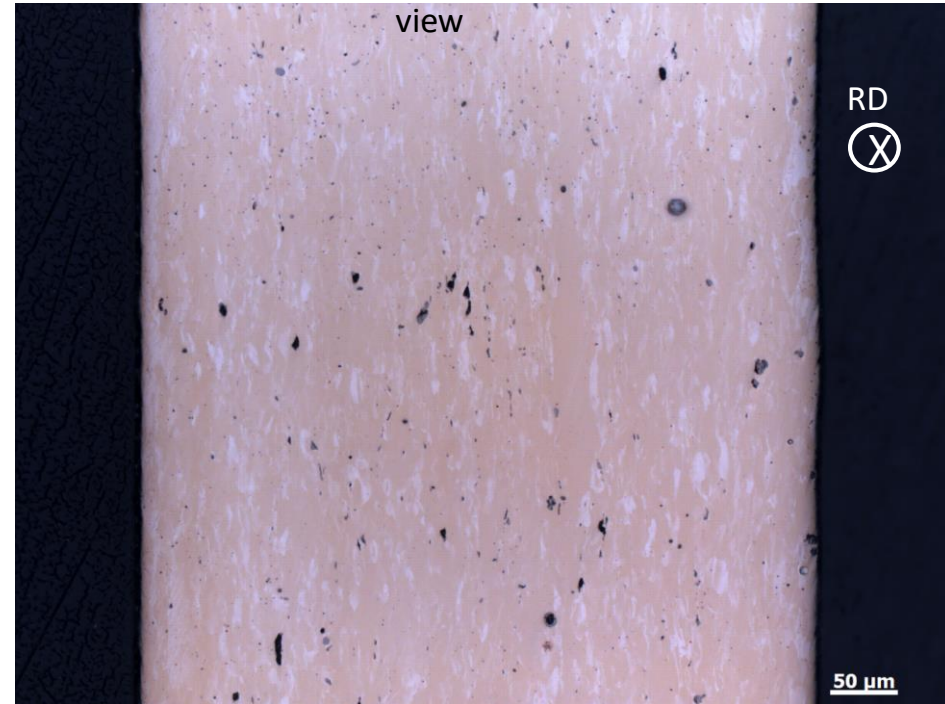
3K32-N8-XL8V-F1

Homogenized, Hot-Rolled, Cold-Rolled

plan View



longitudinal
view



3K32-N8-XL8V-F1

Homogenized, Hot-Rolled, Cold-Rolled

longitudinal view



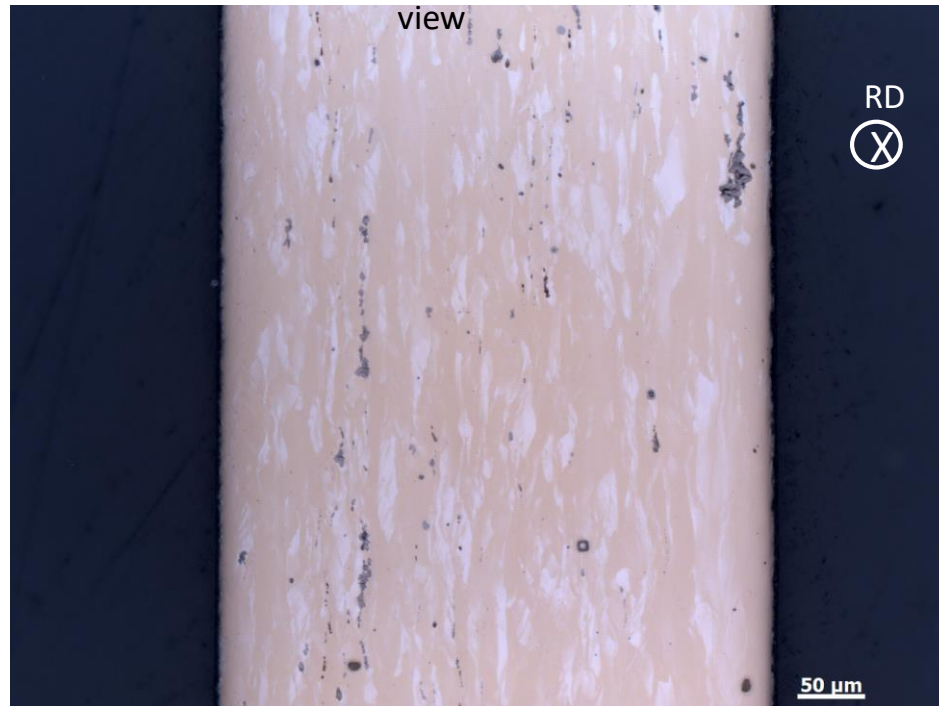
3K32-N8-XL8V-F2

Homogenized, Hot-Rolled, **Annealed**, Cold-Rolled

plan view

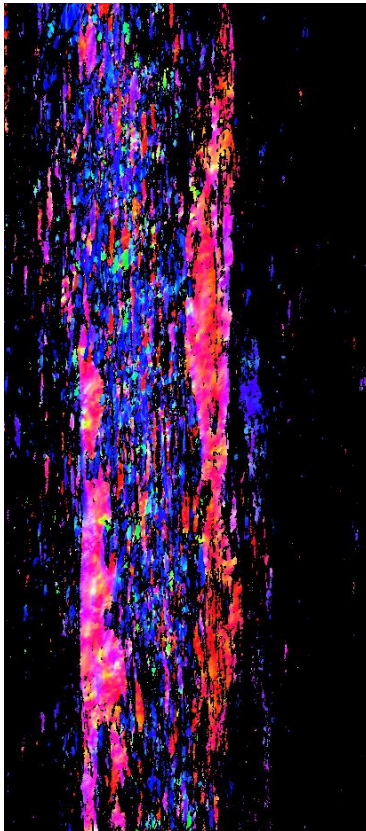


longitudinal
view

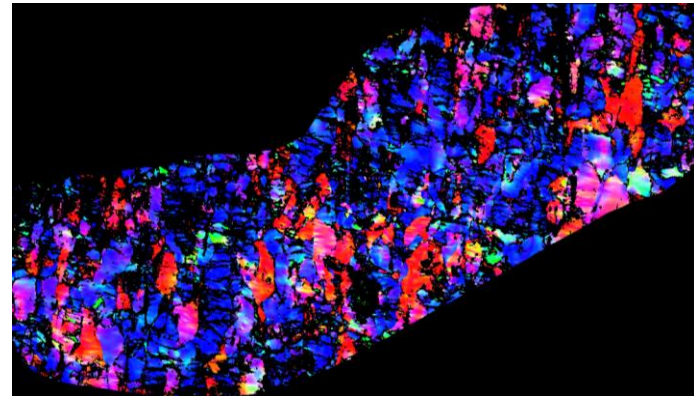


Preliminary EBSD Characterization 3K32-N8-XL8V

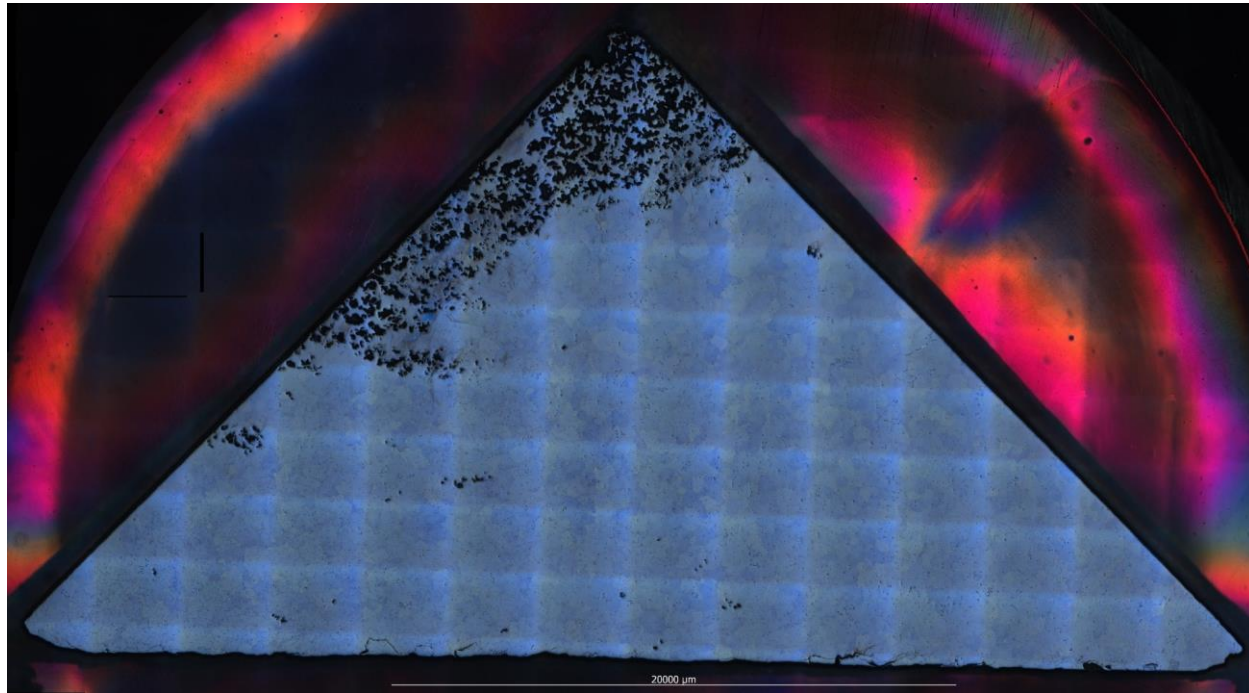
F1



F2 (additional annealing)



Casting Characterization 3K32-N9-XLJP



3K32-N9-XLJP Foils

F1 (HRC)



F2 (HRAC)



3K32-N9-XLJP-F1

FOIL ID:	3K32-N9-XLJP-F1															
	Meas	Spec														
Length (inch)	30.03	30.000 +/- 0.062														
Width (left)	1.759	1.772 +/- 0.010														
Width (middle)	1.667	1.772 +/- 0.010														
Width (right)	1.767	1.772 +/- 0.010														
burs (right)	none															
burs (left)	none															
Thickness measurements (thousandths of inch) <i>Spec = 0.0170 +/- 0.0025</i>																
stance from corne	0"	2"	4"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"
0	18.5	18	18.5	18.5	18.5	18.5	18.5	19.5	19	19	18.5	18.5	18.5	18.5	19	19
0.85	19	18.5	18.5	18.5	19	18.5	18.5	19	19	19	19	18.5	18.5	18.5	18.5	19
1.7	19	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18	18.5	18.5	18	18.5

3K32-N9-XLJP-F2

FOIL ID: 3K32-N9-XLJP-F2

Meas Spec

Length (inch) 30.03 30.000 +/- 0.062

Width (left) 1.759 1.772 +/- 0.010

Width (middle) 1.667 1.772 +/- 0.010

Width (right) 1.767 1.772 +/- 0.010

burs (right) none

burs (left) none

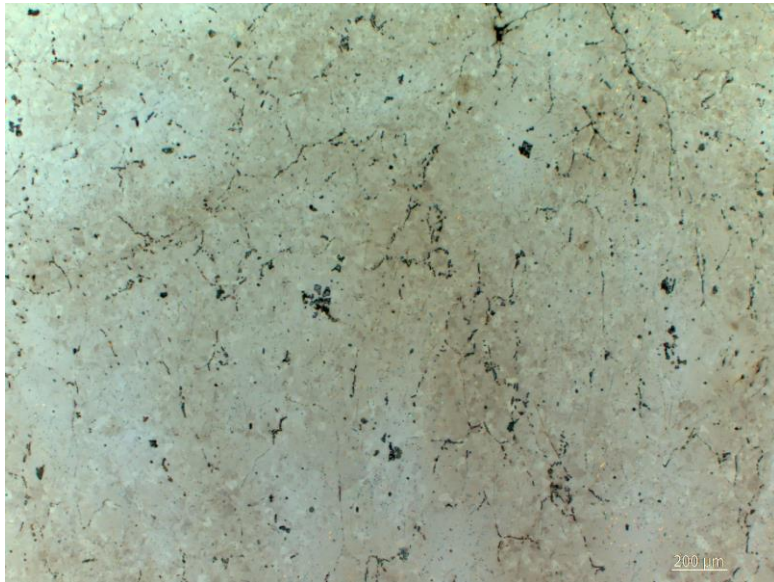
Thickness measurements (thousandths of inch) Spec = 0.0170 +/- 0.0025

Distance from corner	0"	2"	4"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"
0"	18.5	19.5	19	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	19	19	18.5	18.5
0.85"	19.5	18.5	20	20	19	18.5	19	18.5	19	19	19	18.5	19	19	19	19
1.7"	22.5	20	20.5	20.5	19.5	19.5	19	19	18.5	19	19	19.5	19.5	19.5	19	19.5

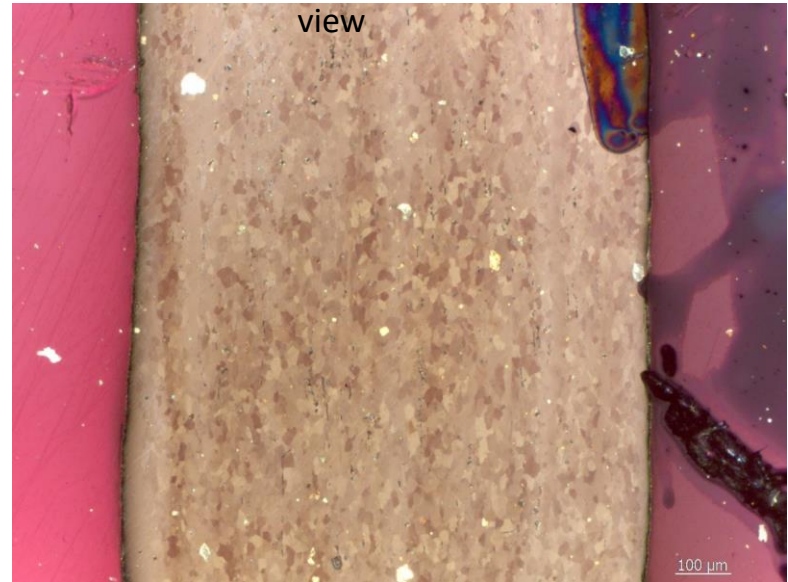
3K32-N9-XLJP

Homogenized, Hot-Rolled

Plan view



Longitudinal view



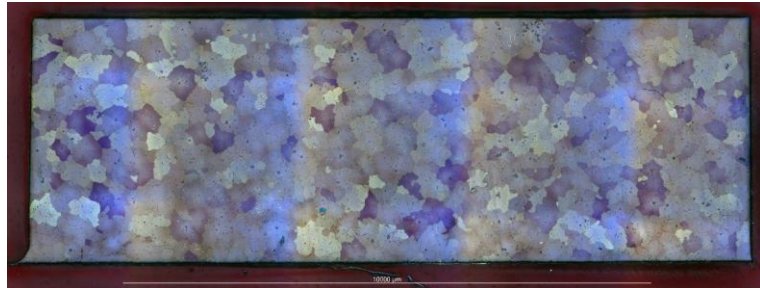
3K32_M5_X21F_longitudinal



3K32_M6_X21F_longitudinal



3K32_M7_X21E_longitudinal



3K32_M7_X21F_longitudinal



3K32_N4_XL8V_longitudinal



3K32_N5_XL8V_longitudinal



3K32_N6_XLJP_longitudinal



3K32_N7_XL8V_longitudinal

